evaluate whether the value of SUVmax and RI can diagnose as lung cancer or the presence of lymph node metastasis.

Results: Eighty-one patients were diagnosed as lung cancer and the median SUVmax was 9.2 (range, 0.8 to 24). Ten patients were diagnosed as benign nodules and the median SUVmax was 3.1 (range, 1.6 to 8.9). There was a significant difference of SUVmax between lung cancer and benign tumor ($p<0.001$). The correlation between tumor size in lung cancer and SUVmax were recognized ($r=0.67$). If the cut-off value of SUVmax was 3.5 or greater to depict malignant tumors, the sensitivity and specificity in all pulmonary nodules were 84% and 80%. The sensitivity and specificity in tumors more than 3cm in diameter were 98% and 100%. On the other hand, in tumors less than 3cm in diameter, the sensitivity and specificity were 48% and 86%. However, if the tumor with either RI of more than 10% or SUVmax of more than 3.5 is classified as lung cancer, the sensitivity and specificity was 83% and 86% in tumors less than 3cm in diameter. Four hundred and sixty lymph nodes of the hilum and the mediastinum were dissected. Twenty-one of those were metastatic lymph nodes (4.6%). If the lymph nodes with 1cm or greater in minor diameter at the chest CT scan are judged with metastasis, the sensitivity, specificity and accuracy were 50%, 97% and 33%, respectively. Whereas if the cut-off value of SUVmax is 3.5 or greater to depict lymph node metastasis at FDG-PET/CT, the sensitivity, specificity and accuracy were 80%, 99% and 76%, respectively. There were 14 false-positive lymph nodes at the chest CT scan and 5 false-positive ones at FDG-PET/CT.

Conclusion: In the tumors more than 3 cm in diameter, the value of SUVmax was a very useful tool for diagnosis of lung cancer. However, in the tumors less than 3 cm in diameter, the value of RI in addition to SUVmax was useful for diagnosis. FDG-PET/CT was significantly better than the chest CT scan for diagnosis of lymph node metastasis.

P1-096 **Imaging and Staging Posters, Mon, Sept 3**

18Fluorodeoxyglucose Positron Emission Tomography in the diagnosis and staging of lung cancer: a systematic review and practitioner guideline in Ontario, Canada

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Background: This systematic review evaluates the accuracy and utility of 18Fluorodeoxyglucose positron emission tomography in the diagnosis and staging of both non-small cell and small cell lung cancer.

Methods: Relevant health technology assessments, randomized trials and meta-analyses were identified through a systematic search of the literature. The Lung Disease Site Group (LDSG) has used the practice guideline (PG) development cycle described by Browman GP et al (JCO 1998; 16(3):1226-31). A unique aspect of the PG is that it incorporates practitioner feedback to evaluate the acceptance of the guideline among its practitioners.

Results: One high-quality health technology assessment developed by the Institute for Clinical and Evaluative Sciences (ICES) in Ontario from 2001 was retrieved and formed the basis for this expanded systematic review. Twelve additional evidence summary reports, including meta-analyses, were reviewed. Thirteen additional prospective studies of the diagnostic accuracy of PET and three randomized controlled trials evaluating the utility of PET in staging and diagnosis were retrieved in a search of the primary literature published following or beyond the scope of the ICES report. PET has high sensitivity, and reasonable specificity for differentiating benign from malignant lesions as small as 1 cm in size. PET is superior to CT imaging for mediastinal staging in NSCLC. PET has not been studied as extensively in patients with SCLC, but the available data shows good accuracy in staging extensive versus limited disease. Randomized trials reporting on the utility of PET report conflicting results in terms of the relative reduction in futile thoracotomies. Many studies have evaluated the accuracy of 18FDG-PET in the diagnosis and staging of lung cancer; however there is limited evidence to determine the impact of PET on clinically important patient outcomes.

Practitioner feedback was obtained through a series of mail out questionnaires to stakeholders that included surgical, medical and radiation oncologists as well as nuclear medicine physicians. The itemized questionnaire elicited feedback regarding the rationale for the guideline, completeness of the literature search, and acceptance of the methodology and recommendations. The percentage of responses that agreed or strongly agreed were 80% (rationale for the guideline), 76% (completeness of literature search), 81% (acceptance of methodology), 56% (agree with draft recommendations) and 49% (approve as a guideline).

Conclusion: PET has high sensitivity and reasonable specificity in differentiating benign from malignant processes in lung cancer. PET may improve results of early-stage lung cancer by excluding patients who have evidence of metastatic disease which is beyond the scope of surgical resection and is not evident by standard preoperative staging procedures. While the systematic review is regarded as a complete and thorough summary of the literature, practitioners disagree on the interpretation of the literature and the clinical utility of PET in the management of lung cancer.

P1-097 **Imaging and Staging Posters, Mon, Sept 3**

18Fluorodeoxyglucose Positron Emission Tomography and co-registered computed tomography for radiation treatment planning in lung cancer: a systematic review

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Background: This systematic review evaluates the available evidence on the role of Positron Emission Tomography (PET) and Co-registered Computed Tomography (CT) simulation in radiation treatment planning for lung cancer.

Methods: Relevant studies that incorporated PET or gamma camera coincidence imaging (GCCI) into radiation treatment planning were identified through a systematic search of the published clinical literature using major electronic indexes (e.g., MEDLINE, EMBASE, COCHRANE).

Results: Twenty-one studies incorporating PET (n=18) or GCCI (n=3) into the radiation treatment planning process for patients with lung cancer were identified from 1996 to 2006. Resolution capabilities of PET